

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
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1. REPORT DATE		2. REPORT TYPE Viewgraphs		3. DATES COVERED	
4. TITLE AND SUBTITLE Ultrasonic Imaging of TTCP Samples				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) William R. Davis				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Air Warfare Center Aircraft Division 22347 Cedar Point Road, Unit #6 Patuxent River, Maryland 20670-1161				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			William R. Davis
Unclassified	Unclassified	Unclassified	SAR	15	19b. TELEPHONE NUMBER (include area code) (301) 342-3761

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39-18

DECLASSIFIED AND EXTENDED 4

20001031 069



The Technical Cooperation Program (TTCP)

Technical Panel Annual Meeting

Materials Group TP-5

Evaluation of Samples Using Ultrasound Imaging

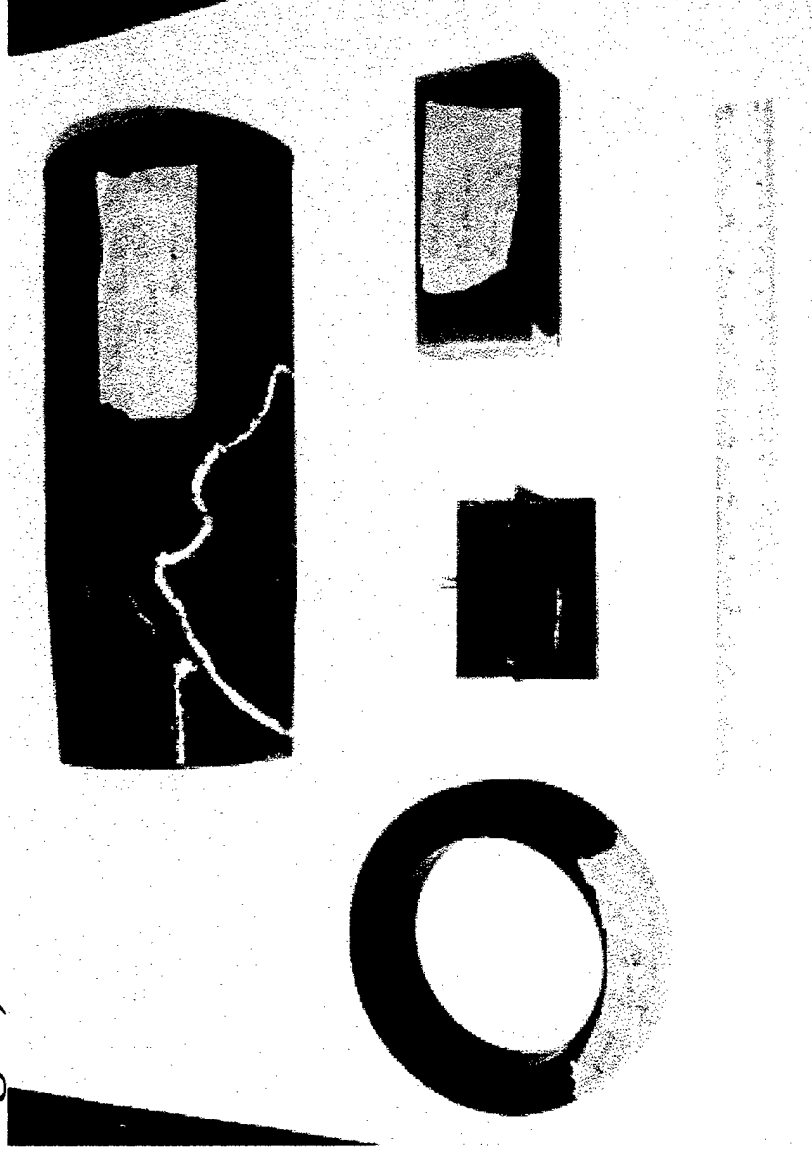
William R. Davis

Dr. Ignacio Perez

16 - 20 October 2000

TCCP Sample Evaluation

RAH66 Quill Detector Face Drive Shaft (top), Quill Shaft
(bottom left), small brace (bottom center), and flex beam
(bottom right)





TCCP Sample Evaluation



RAH 66 Quill Shaft 7/8" thick by 6" dia. By 1 1/8" high ring.

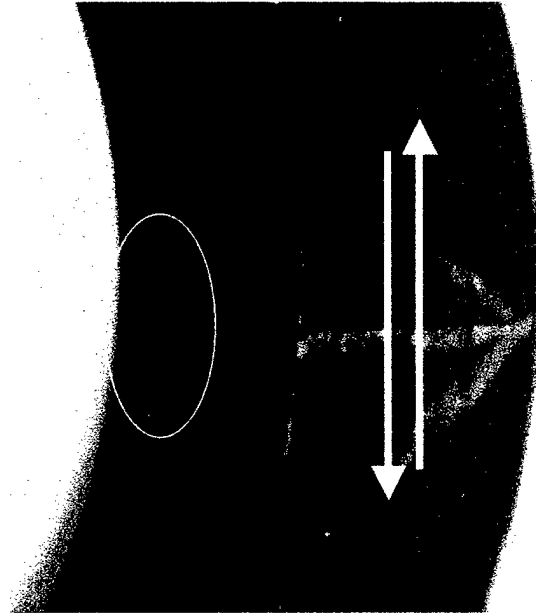


7/8" x 6" x 1 1/8" TCCP Sample Evaluation

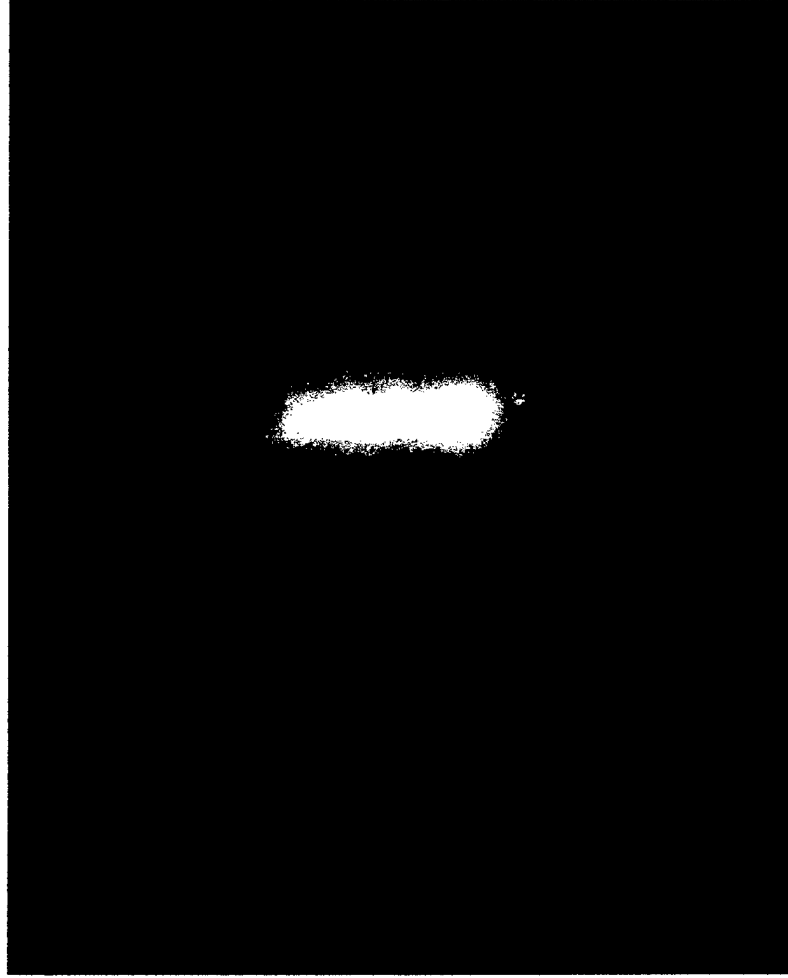
TCCP Sample Evaluation

RESEARCH &
ENGINEERING

RAH 66 Quill Shaft is a 7/8" thick by 6" diameter by 1 1/8" high ring. A 1 MHz 1.5" diameter transducer was used in through transmission mode. This shows a full height disbond 1/2" wide.



13 14 15 16 17 18





TEAM

TACP Sample Evaluation

**RESEARCH &
ENGINEERING**

RAH66 Quill Detector Face (Dr) Shaft Examined by through transmission. Thickness is 1/2 inch to 1 inch. Height 12.5 inch, 5 3/4 inch diameter

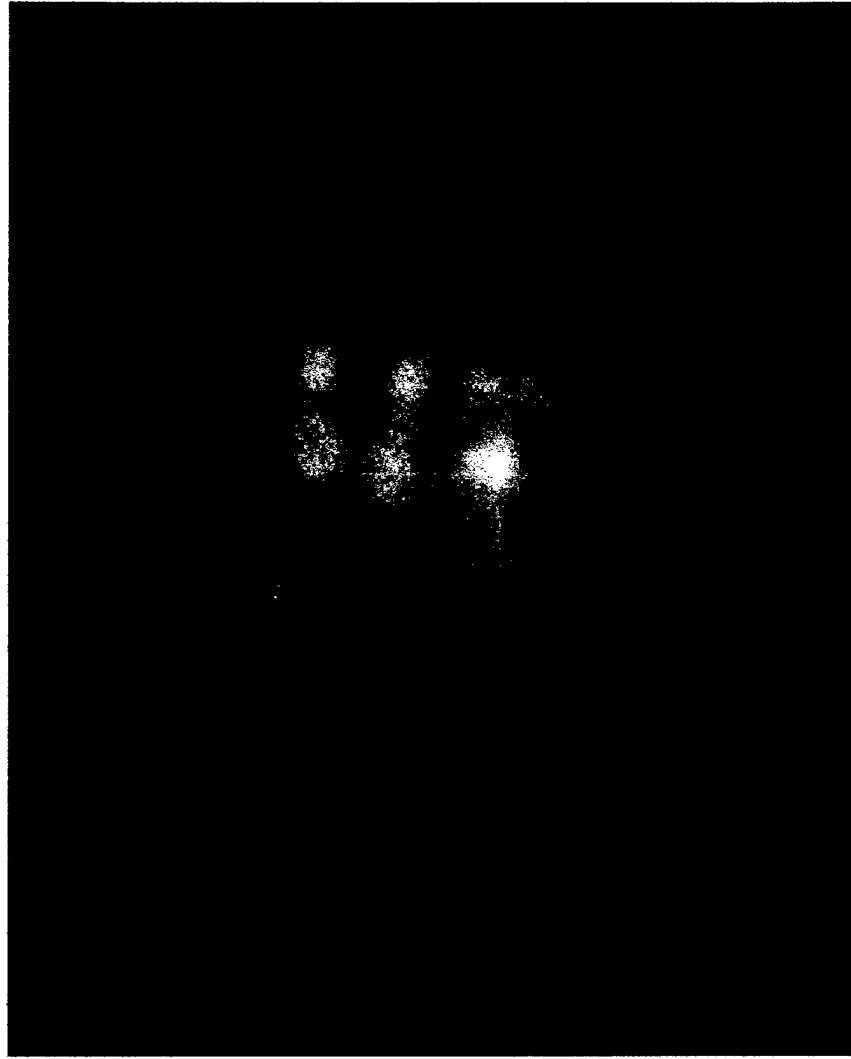
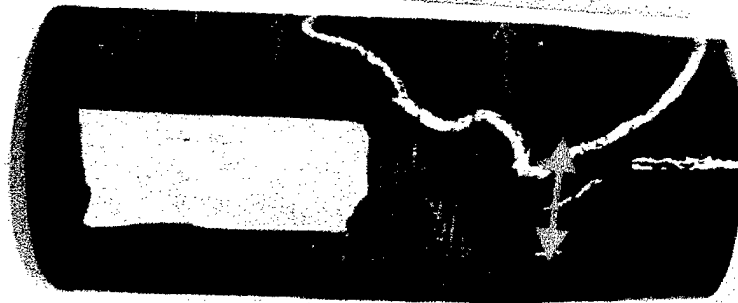




TCCP Sample Evaluation



Quill Detector Face Bottom section –heavy thickness section
examined by through transmission at 2.25 MHz

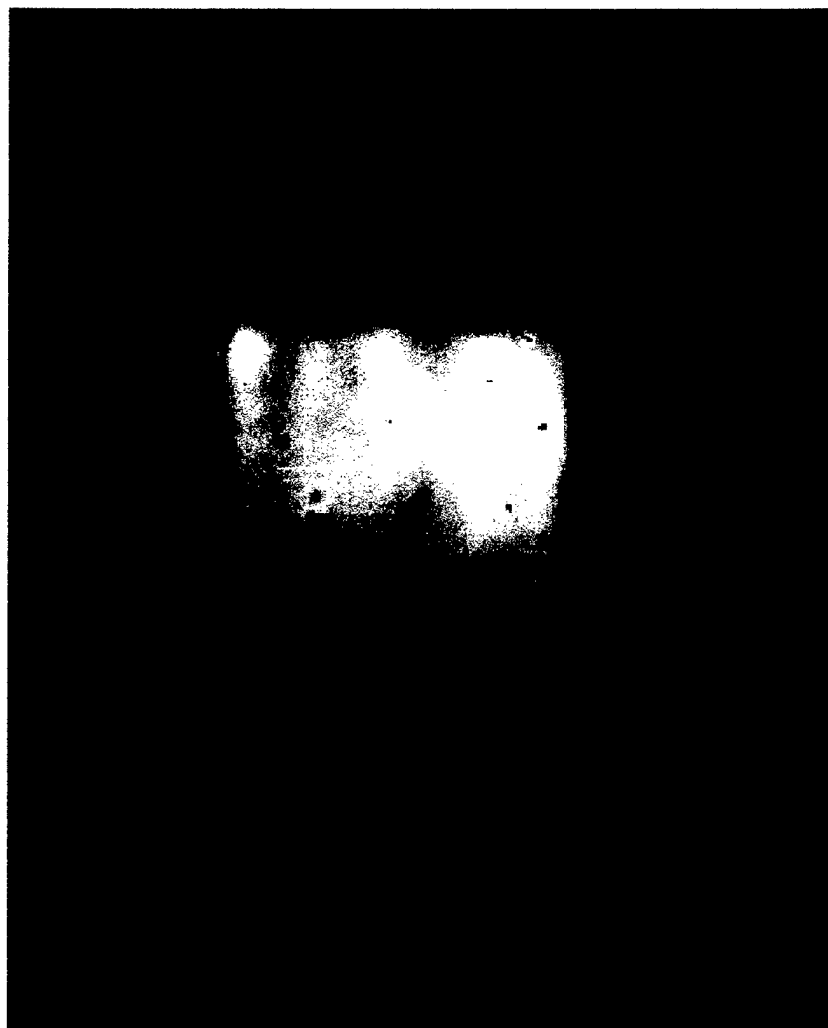




TCCP Sample Evaluation



RAH66 Quill Detector Face (Dr) Shaft imaged using a 2.5 MHz
1.5" diameter transducer in through transmission. The thin
Top Section is approximately 0.625 inch thick.

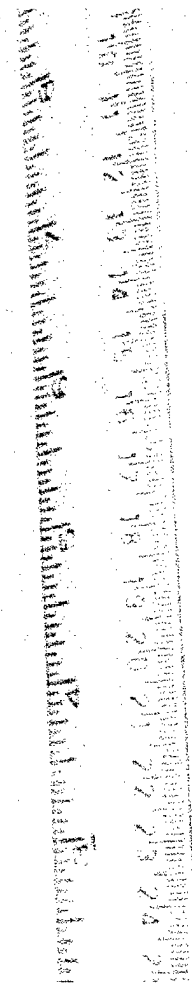
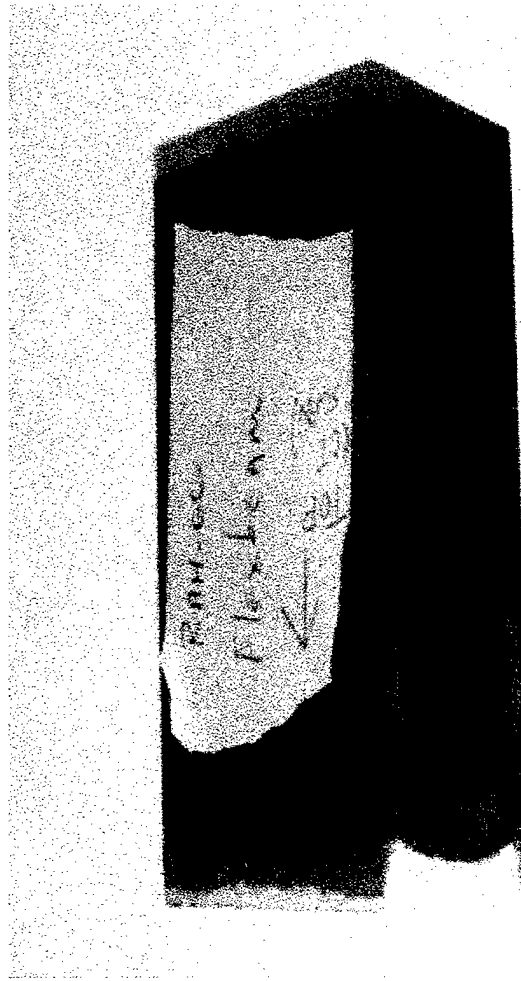




TACP Sample Evaluation



The RAH66 Flex beam, 1.125" thick x 5.25" x 2.375"

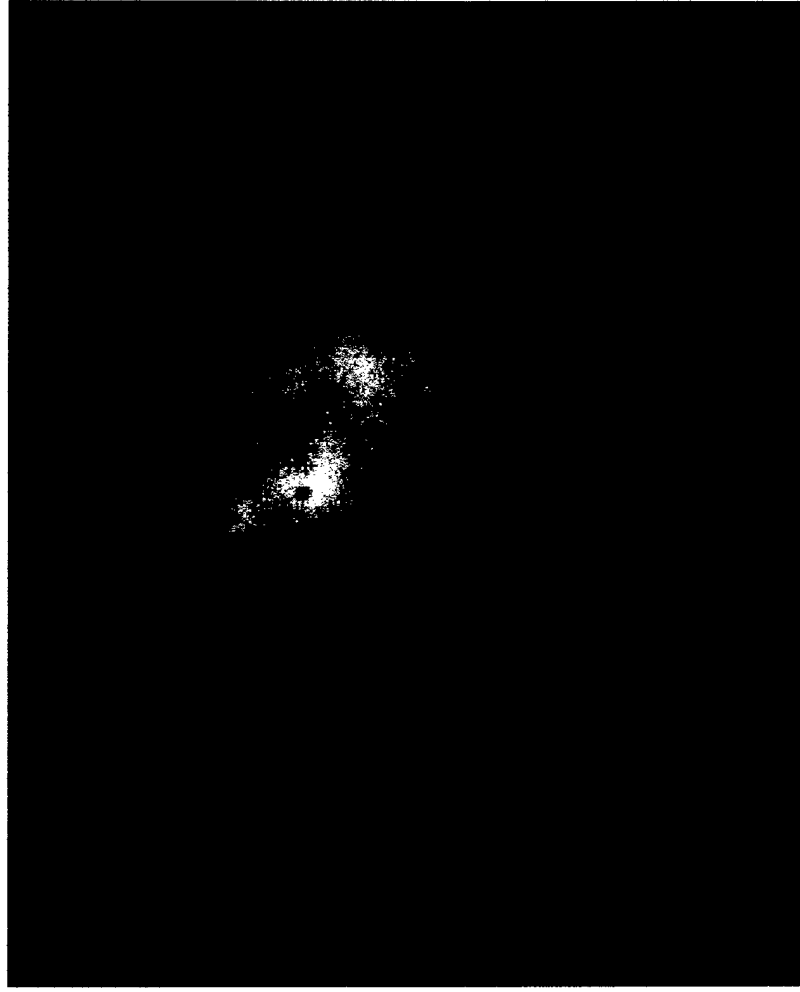
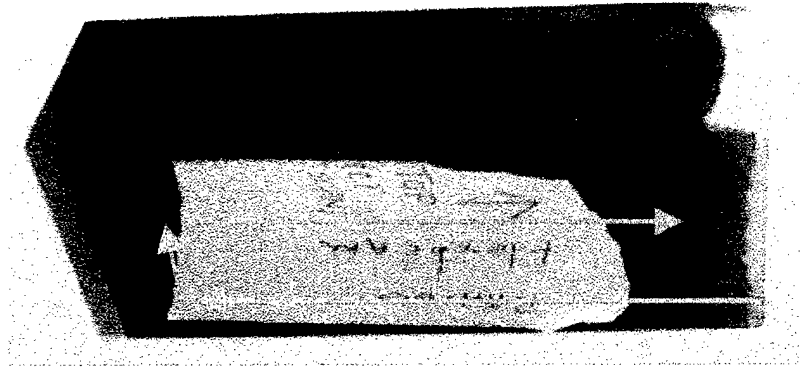




TCCP Sample Evaluation



RAH66 Flexbeam imaged using Through Transmission at
2.25 MHz shows a darker line of marceling near the top

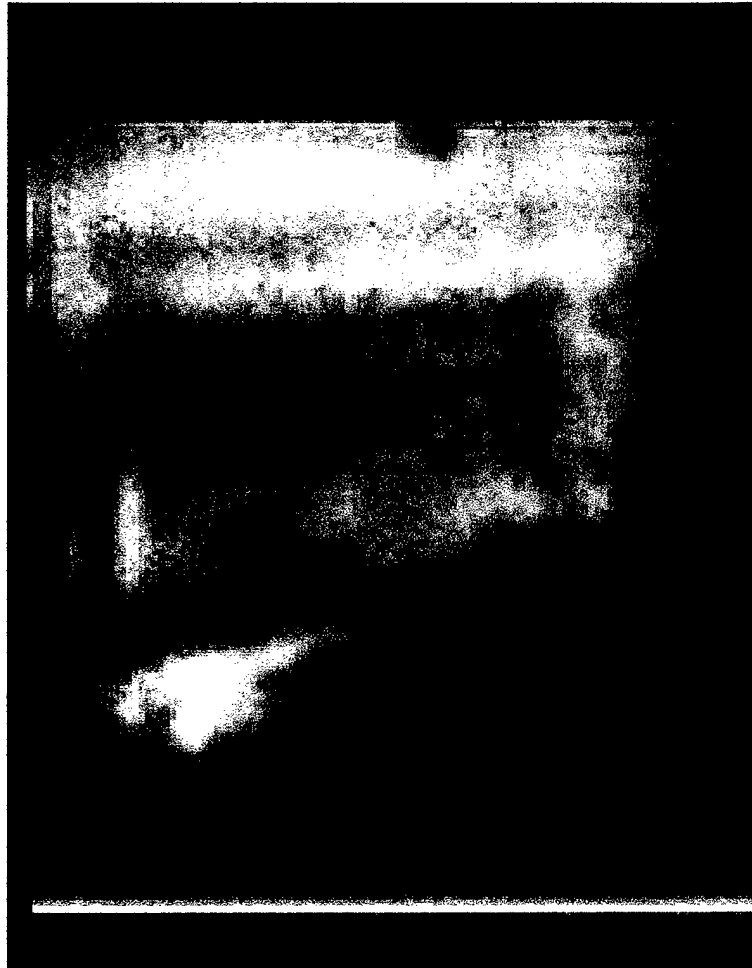
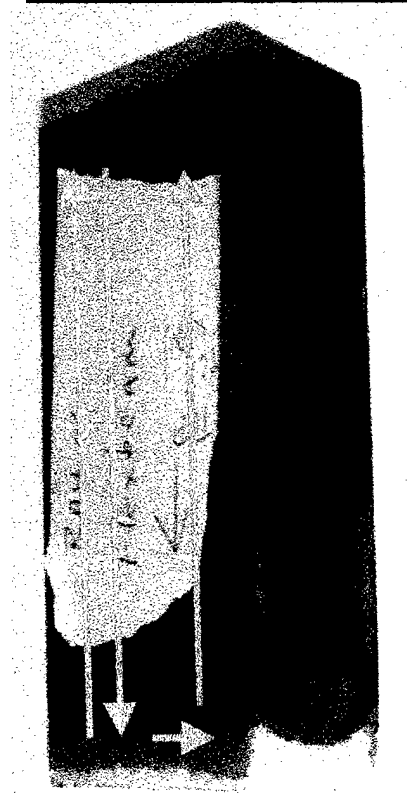




TACP Sample Evaluation

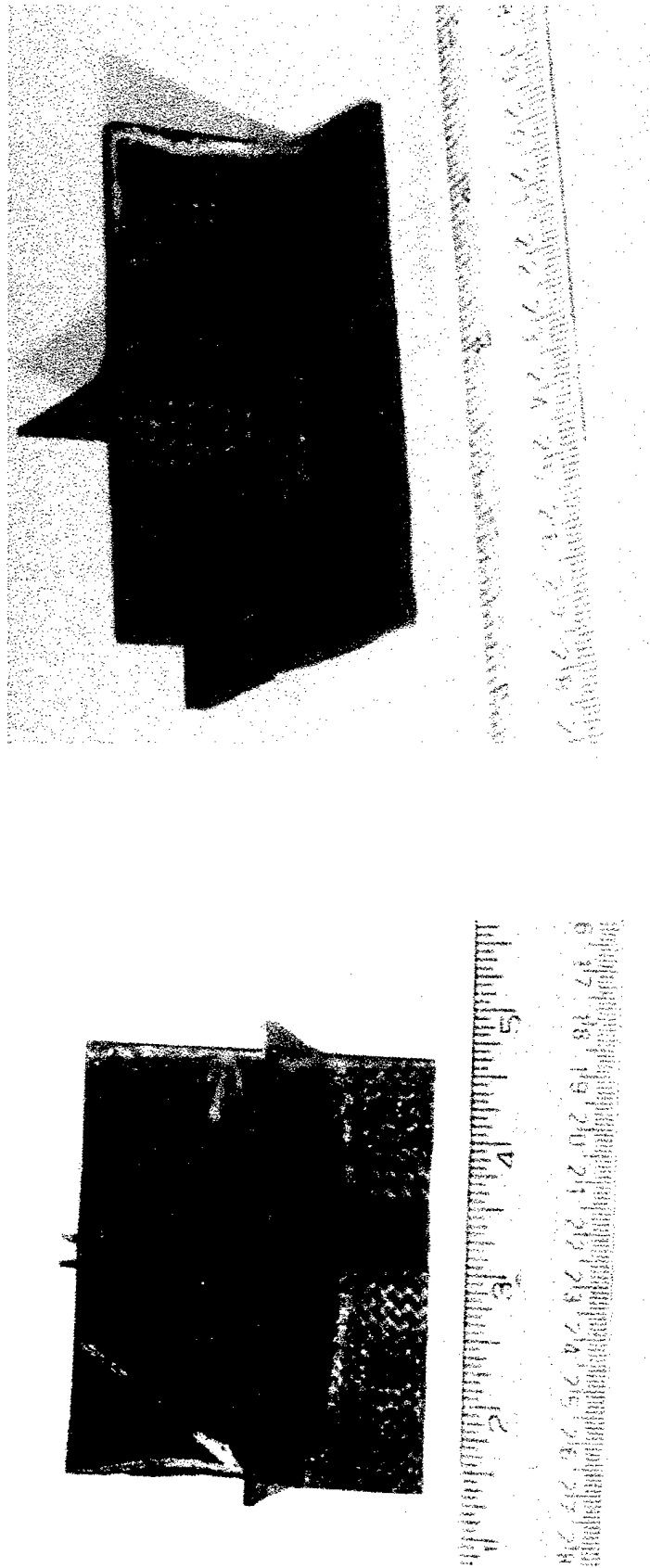


RAH66 Flex beam in tank. One sided imaging of the ultrasound by reflection shows some near surface discontinuities near the end of the flex beam.



TTCP Sample Evaluation

IAMT prepreg box, overhead and side views

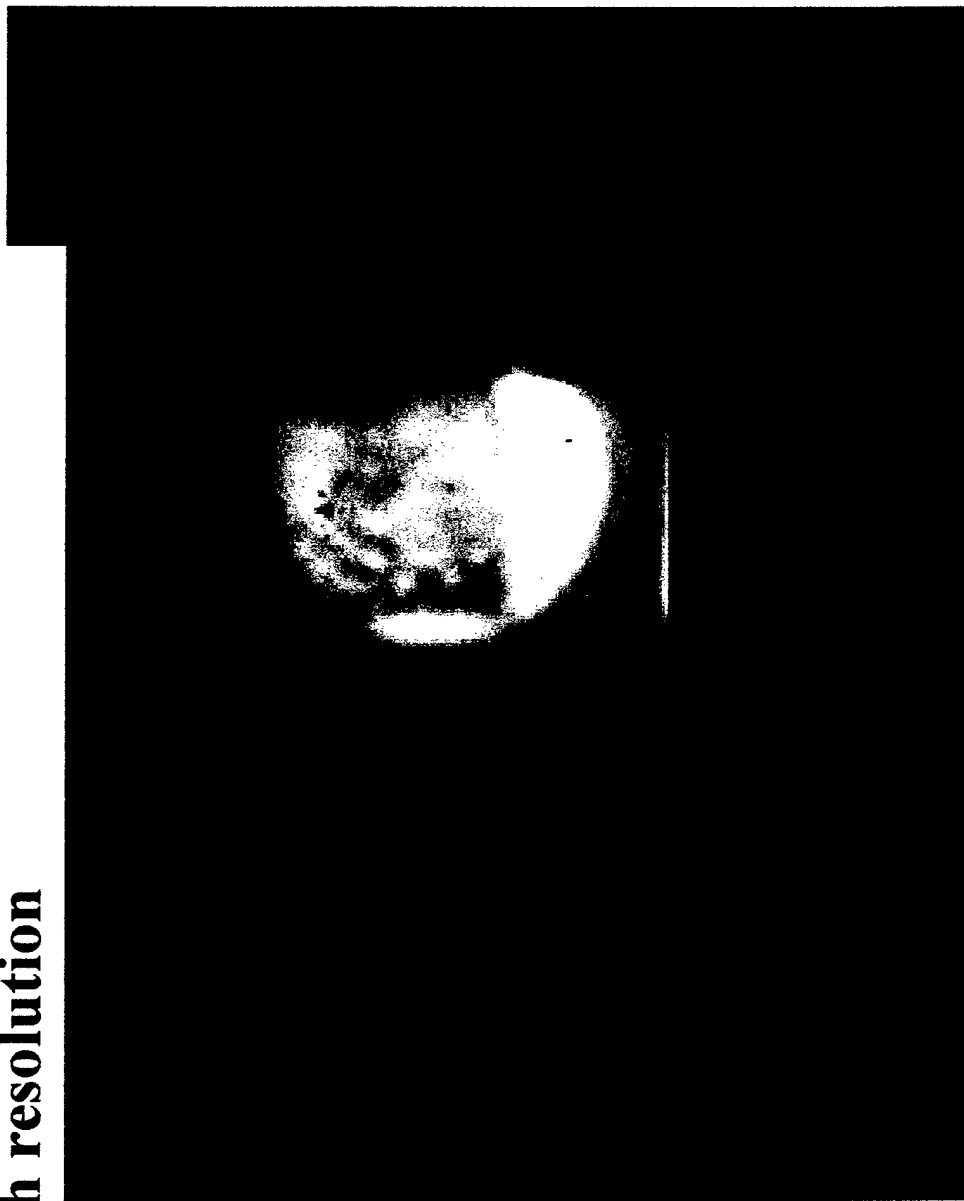
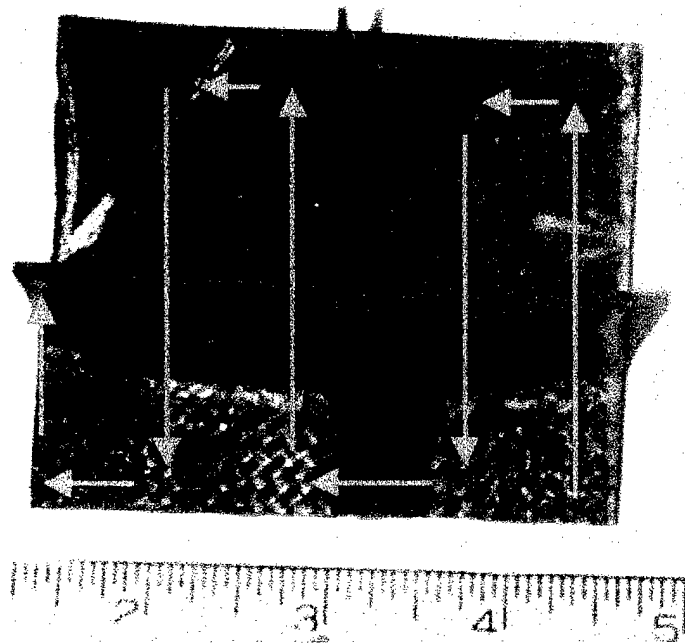




TACP Sample Evaluation

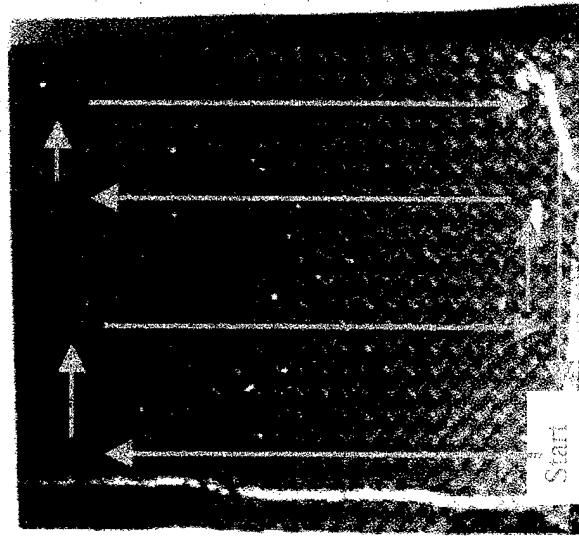


IAMT prepreg box imaged in through transmission
using 5 MHz for high resolution



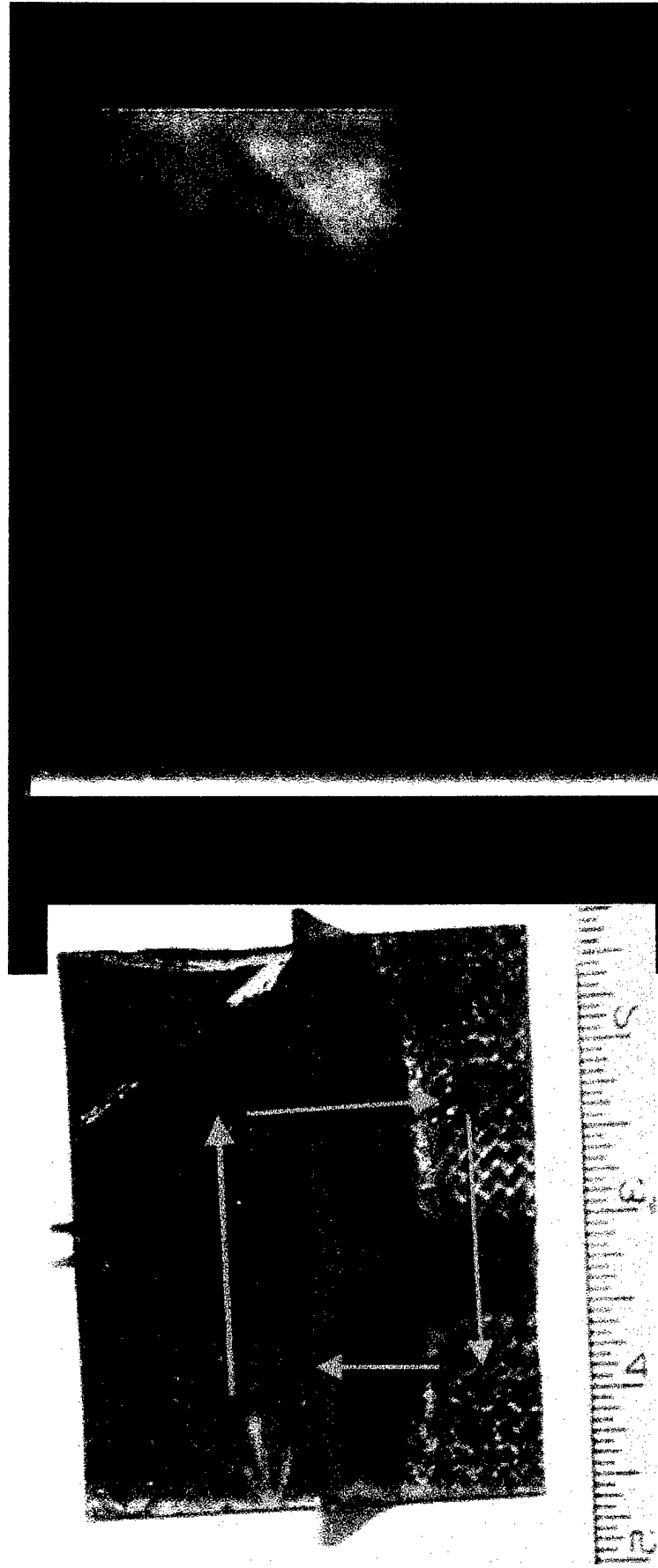
TCCP Sample Evaluation

IAMT prepreg box imaged using the reflection camera in the tank. Back reflection imaging of the bottom of the part shows a discontinuity on one corner, and a surface discontinuity



TACP Sample Evaluation

IAMT prepreg box imaged by reflection in the tank. Back reflection imaging with an increased time delay shows the triangular machined area and the 4 ribs



TACP Sample Evaluation

3 cm thick balsa wood cored multilayer panel imaged
using 5 MHz ultrasonic reflection camera in reflection

